

## Almost a Third of Tropical Africa's Flora Faces Extinction

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**31.7% of tropical Africa's vascular plant species could be threatened with extinction, reveals an international study coordinated by an IRD researcher, published in the journal *Science Advances* on 20 November 2019. Using a new approach based on the key elements of the assessment process used by the International Union for Conservation of Nature (IUCN), for the first time researchers have been able to assess the potential conservation status of tropical flora on the scale of a continent.**

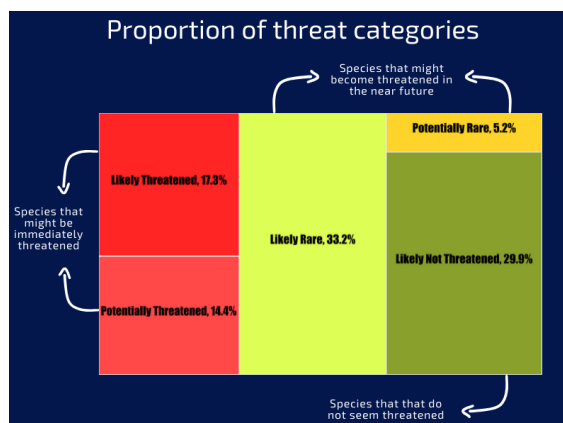
Given the anthropological and climate threats facing nature, the conservation of tropical biodiversity is a major challenge. To encourage the implementation of better biodiversity management practices, countries and international agreements on biodiversity refer to the assessments of species "at risk of extinction" performed by the IUCN as part of a standardised procedure (See [Red List of Threatened Species](#)). This approach remains the most comprehensive and objective means of identifying species in need of protection.

However, while the conservation status of the majority of vertebrate species has been assessed, the same cannot be said for plants, although they are critical to earth ecosystems. This is especially true in tropical regions where the flora is very diverse but remains poorly documented.

### 6,990 Potentially Threatened Species

In this study, the researchers developed a new fast and automatic approach based on key elements of the conservation assessment process used by the IUCN. Their objective was to provide relevant information on the conservation status of a large number of plant species at broad scales, in the form of Preliminary Automated Conservation Assessments (PACA).

The researchers therefore applied this methodology to the [RAINBIO](#)<sup>1</sup> database, which contains over 600,000 georeferenced occurrences of plants in tropical Africa across more than 20,000 vascular plant species.



After classifying these species into six categories – which include species that are “probably or potentially threatened”, those that are “potentially rare” and those that are “potentially not threatened” – they reveal that almost a third (31.7%) of the 22,036 vascular plant species studied are potentially threatened with extinction, and an additional 33.2% are potentially rare (they could be threatened in the near future).

<sup>1</sup> Single, open-access database financed by CESAB and FRB, compiling a large majority of the data on plant occurrences collected in Africa between 1782 and 2015 (See Marc S. M. Sosef et al. Exploring the floristic diversity of tropical Africa. [BMC Biology](#), 2017).



Endangered species include *Polystachya lejolyana* (left, © IRD - Vincent Droissart), a species of orchid found in Cameroon and Gabon, *Monodora hastipetala* (center, © IRD - Thomas Couvreur), a plant of the family *Annonaceae* that grows in Tanzania, and *Sericanthe lowryana* (right, © UYI - Bonaventure Sonké), a species of *Rubiaceae* from Cameroon.

## Facilitating Large-Scale Biodiversity Assessments

After determining the most endangered species, the researchers identified four regions in Africa that are particularly exposed: Ethiopia, central Tanzania, the south of the Democratic Republic of the Congo and the West African tropical rainforests.

They highlight the advantages of this approach, based on the preliminary automated conservation assessments, in terms of cost reduction, time saving and the potential to carry out large-scale assessments. "This study is the first large-scale assessment of the potential conservation status of the tropical African flora, explicitly using the IUCN's methodology", explains botanist Thomas Couvreur from the IRD who coordinated the study. "These assessments could provide crucial information for improving biodiversity management and promoting sustainable economic development in Africa. They are, however, not intended to replace the comprehensive assessments carried out by the IUCN which lead to official statuses. The two approaches are complementary, and a significant international effort is still needed to assess all plant species in Africa", he urges.

"These results were possible because the partners involved agreed to share their data", says Bonaventure Sonké, Professor at the Laboratory of Systematic Botany and Ecology of the Ecole Normale Supérieure (University Yaounde 1, Cameroon). "This is a strong signal to encourage researchers to share their data, in order to obtain results on a larger scale".

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### For further information

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**Reference:** T. Stévant, G. Dauby, P.P. Lowry II, A. Blach-Overgaard, V. Droissart, D.J. Harris, B.A. Mackinder, G.E. Schatz, B. Sonké, M.S.M. Sosef, J-C. Svenning, J.J. Wieringa, T.L.P. Couvreur. A third of the tropical African flora is potentially threatened with extinction, *Science Advances*, 20 novembre 2019. DOI : 10.1126/sciadv.aax9444

**Partners of the study:** Missouri Botanical Garden, Université Libre de Bruxelles, Aarhus University, Royal Botanic Garden Edinburgh, Royal Botanic Gardens Kew, Université de Yaoundé 1, Ecole normale supérieure du Cameroun, Botanic Garden Meise, Naturalis Biodiversity Center, IRD.

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## Contacts

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- **IRD Press Office:** Cristelle Duos | [presse@ird.fr](mailto:presse@ird.fr) | T: +33 4 91 99 94 87
- **Researchers:** Thomas Couvreur, botanist at IRD, *Diversité, Adaptation, Développement des plantes* Laboratory (DIADE – IRD/Université de Montpellier/Cirad/CNRS) | [thomas.couvreur@ird.fr](mailto:thomas.couvreur@ird.fr) | T: + 593 9 86 19 44 55
- Gilles Dauby, ecologist at IRD, *Botanique et modélisation de l'architecture des plantes et des végétations* Laboratory (AMAP – IRD/CNRS/INRA/Université de Montpellier) | [gilles.dauby@ird.fr](mailto:gilles.dauby@ird.fr) | +33 4 67 61 55 18
- Bonaventure Sonké, Professor at *Laboratoire de Botanique systématique et d'Ecologie de l'Ecole normale supérieure* (Université Yaoundé 1, Cameroon) | [bonaventure.sonke@ird.fr](mailto:bonaventure.sonke@ird.fr) | +237 6 99 88 15 36